Integrated Water Quality and Aquatic Communities Protocol – Wadeable Streams

Standard Operating Procedure (SOP) #2: Field Crew Training

Draft Version 1.0

Revision History Log:

Previous Version	Revision Date	Author	Changes Made	Reason for Change	New Version

This SOP explains what procedures will be completed to ensure that the field crew is adequately trained. Training should include procedures on sample collection and processing, data management methods, identification of fish and amphibians, and emergency procedures and safety, as well as National Park Service rules and ethics.

Sample Collection and Processing Training

Ensuring that field crews are adequately trained begins with the selection of qualified individuals who have prior knowledge of and experience in methods of aquatic ecology. However, since it will not always be possible to hire an "idealized" individual, a comprehensive training should be implemented so that crews are familiar with all techniques used in the field and prepared to respond to possible contingencies. The training protocols should always be adhered to, even if highly experienced individuals are hired. Because standardized field sampling methods are essential to the Klamath Vital Signs Monitoring Program, field crew members are under no conditions to skip training sessions or to "ad lib" in the field. The collection and processing techniques presented within these protocols are susceptible to error from improper collection techniques (e.g., water chemistry contamination) or by modifying sampling approaches (e.g., invertebrate collection). Hence, even highly experienced crews should be trained and retrained each field season if comparable data are to be obtained. Quality training is the first step of this protocol's QAPP (SOP #19: Quality Assurance Project Plan).

The training will start with classroom sessions, where the Project Lead instructs the two crew members in the following:

1. Background on I&M program objectives.
2. Administrative tasks (timesheets, vehicle procedures, reimbursement, etc.).
3. Sampling design and data analysis.
4. Field sampling methods and QA/QC concerns.
5. Equipment operations and maintenance.

6. Field and laboratory sample processing and handling.
7. Fish and amphibian species identification, handling, and a primer on wildlife diseases.
8. Recording and storing data, both manually and digitally.
9. Safety in the backcountry.
10. Orienteering.
11. Backcountry rules and ethics.
12. Computer data entry.

Many of the training elements may be best demonstrated in the field; hands-on training is crucial. The preferred format for training is for the Project Lead to accompany the entire field crew to sites during the first week of the field season. The Project Lead conducts a workshop at the first site to be sampled, instructing the crew on proper techniques. In this process, extra time is taken to perform each technique, with the Project Lead also providing rationale for each method to give the crew members the proper context for the methodology.

After the initial demonstration site, the Project Lead should observe the field crew at a minimum of two additional sites, giving corrective comments to ensure proper collection techniques of each protocol. If additional training sites are necessary, the Project Lead and Crew Leader should adjust the site schedule as necessary.

The training should extend to tasks and SOPs relating to activities occurring at the field lodging (e.g., SOP #17: Post-site Tasks, electronic data backup, data storage, probe maintenance, etc.)

As each SOP is discussed, demonstrated in a workshop, and mastered by crews in the field, the training should be documented using Training Logs (Appendix F).

Specific Concerns

In addition to the specific protocols, the field crew should read, be familiar with, and follow the practices of:

1) "*Leave No Trace*," from the Center for Outdoor Ethics(as provided in Appendix D); and
2) "*Guidelines for use of live amphibians and reptiles in field and laboratory research*" from the American Society of Ichthyologists and Herpetologists (relevant sections, as provided in Appendix K)

First Aid, Safety, and Emergency Procedures

All project personnel will be working in remote areas at some point during the field season; it is therefore essential that everyone, to the extent possible, be prepared for emergency situations. A one to two day training in First Aid and CPR will be arranged and provided for.

Crews should also discuss the Job Hazard Analyses (Appendix N) with the Project Lead and potential responses to theoretical emergency situations, having a clear understanding of what to do if they or someone else on the crew becomes seriously injured or goes missing.

In addition, all crew members should be trained in the use of handheld 2-way radios that will be provided to each team (Appendix E: Icom Radio Use Handbook).

Backcountry Rules and Ethics

In addition to the standard guidance of "*Leave No Trace*" (Appendix D), project personnel should receive instruction on backcountry regulations for the parks, including permit requirements and procedures, campsite restrictions, food storage, fire season restrictions, etc. Note that some of these rules differ among the parks. If possible, arrangements should be made for a backcountry ranger or other qualified Park Service employee to meet with the crew to discuss these topics. Regardless, it is the Project Lead's responsibility to make sure that all crew members understand the rules they must follow.

Data Entry, Management, and Organization

Project Leads, technicians, and interns will be trained in a variety of data management topics including but not limited to the I&M programs vision of data management, the KLMN Data Management Plan, data collection and entry, data organization and storage, and quality control procedures, according to SOP #4: Data Entry and SOP #19: Quality Assurance Project Plan at the onset of the field season. As a group, the data entry protocol will be reviewed. Each pertinent database will be demonstrated on the tablet computer by entering several example records. Time will be allotted for the field crew to practice the data entry system and for questions to be answered. The functions of the camera and metadata data sheet will be reviewed. In addition, the concept of the log books (event, datasheet, equipment, and training) will be discussed. In addition to specific data entry and backup methods, each crew member will be trained on the importance of careful data management techniques for achievement of the overall science and conservation goals of the program.